VPDES PERMIT FACT SHEET

This document gives pertinent Information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Mnor**,** municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge is the treated domestic wastewater generated by the secondary school complex. This permit action consists of updating Part I limitations and special conditions and adding an *E. coli* limitation.

1. Facility Name and Address: Sussex School Complex Sewage Treatment Plant
21394 Sussex Drive, Sussex VA 23884
(Address changed; location remains the same)

SIC Code: 8211 (elementary and public schools)
4952 (sewerage systems)

2. Permit No. VA0090786
Existing Permit Expiration Date: October 19, 2011

3. Owner Name: Sussex County School Board
Contact: Charles Harris, PhD.
Title: Superintendent
Telephone Number: (434)246-1050
Address: P.O. Box 1368
Sussex, VA 23884

Facility Contact Name: Gerald Lacerte
Title: Operator
Telephone Number: (434) 246-6601

4. Application Complete Date: 8/16/11
Permit Drafted By: Emilee Carpenter Date: 7/26/11
Piedmont Regional Office
Reviewed By: Janine Howard Date: 7/28/11
Curt Linderman Date: 8/8/11
Heather Horne Date: 8/11/11
Kyle Winter Date: 8/11/11
Public Comment Period Dates: from: 8/24/11 to 9/26/11
Publication in Sussex-Surry Dispatch Dates: 8/24/11 & 8/31/11

5. Receiving Stream Name: Anderson Branch
River Mile: 5AAND001.55
Basin: Chowan River and Dismal Swamp
Subbasin: Chowan River
Section: 2b
Class: VII *(This designation applies to Hunting Quarter Swamp and its tributaries to their headwaters. Anderson Branch is a tributary to Hunting Quarter Swamp.)*
Special Standards: none

7-Day, 10-Year Low Flow:	0.00 MGD	1-Day, 10-Year Low Flow:	0.00 MGD
30-Day, 5-Year Low Flow:	0.00 MGD	Harmonic Mean Flow:	0.00 MGD
30-Day, 10-Year Low Flow	0.00 MGD		
Tidal?	NO	On 303(d) list?	NO

Refer to Flow Frequency Memo in **Attachment A**.

6. Operator License Requirements: The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collection and Treatment Regulations (SCAT) 9VAC25-790 et seq. The 2006 permit did not require a licensed operator. GM07-2012 states that licensed operators may be required on a case-by-case basis for facilities with a design flow < 0.040 MGD. This facility has historically struggled with inconsistent inflow volume and dilute influent, which requires constant operator attention to balance. Given the challenge of operating this facility, a Class IV Licensed Operator will be required in the 2011 permit. Class IV is consistent with the Sewage Collection and Treatment Regulations (9VAC25-790-300) recommendation for this size treatment works and treatment process. As the School Board is currently employing a Class III licensed operator (Gerald Lacerte), a compliance schedule is not needed to meet this new requirement.

7. Reliability Class: Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure. The permittee is required to maintain Class II Reliability for this facility.

8. Permit Characterization:

( ) Issuance
(X) Reissuance
( ) Revoke & Reissue
( ) Owner Modification
( ) Board Modification
( ) Change of Ownership/Name
Effective Date:
(X) Municipal
SIC Code(s): 4952, 8211
( ) Industrial
SIC Code(s):
(X) Publicly owned
( ) PVOTW
( ) Private
( ) Federal
( ) State

(X) Existing Discharge
( ) Proposed Discharge
( ) Effluent Limited
(X) Water Quality Limited
( ) WET Limit
( ) Interim Limits in Permit
( ) Interim Limits in Other Document (attached)
( ) Compliance Schedule Required
( ) Site Specific WQ Criteria
( ) Variance to WQ Standards
( ) Water Effects Ratio
(X) Discharge to 303(d) Listed Segment
( ) Toxics Management Program Required
( ) Toxics Reduction Evaluation
( ) Possible Interstate Effect
( ) Storm Water Management Plan

9. Discharge Description

Table I. Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	DESIGN FLOW
001	Domestic wastewater from the elementary and high school.	Influent grinder pump, activated sludge, upflow sludge blanket filtration system, tablet chlorination and dechlorination, post aeration	0.030 MGD

Refer to **Attachment B** for a facility diagram.

10. Sludge Use or Disposal: Sewage sludge is stored in an aerated tank until it is hauled to Black Swamp Regional WWTP (Sussex Service Authority VA0088978) for treatment and disposal.

11. Discharge Location Description: Topographic Map #39A: Sussex. Refer to **Attachment C**.

12. Material Storage: Chemicals used in the treatment process, including soda ash, refined sugar, chorine and dechlorination tablets are stored inside the lab building. The chlorine and dechlorination tablet buckets that are in use are stored outside with sealed lids. There is no apparent exposure of chemicals to storm water.

13. Ambient Water Quality Information: Field data from the monitoring station 5AAND000.10 was chosen to represent ambient conditions. The station is located near the mouth of Anderson Branch at the Route 634 bridge. Unfortunately, hardness data was not collected at this station, so hardness data from station 5AHQS006.22 was used. The station is located on Hunting Quarter Swamp at the Route 624 bridge, which is directly below the confluence with Anderson Branch. Although ambient data was gathered and presented in the factsheet, the data was not used in the calculation of effluent limitations. The Water Quality Standards do not allow mixing in swampwaters, so the effluent must meet Water Quality Standards at the end of pipe.

14. Antidegradation Review & Comments:
Tier: 1_____ 2__X__ 3_____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The limitations in this permit were developed in accordance with § 303(d)(4) of the Clean Water Act. Therefore, antidegradation restrictions do not apply.

The antidegradation review begins with a Tier determination. Due to natural swampwater conditions which cause dissolved oxygen WQS violations, the appropriate tier cannot be determined at this time. No further degradation is allowed. Consequently, for the purposes of this evaluation, the stream is treated as a Tier 2 water.

15. Site Inspection: Date: 7/6/11 Performed by Emilee Carpenter.
See **Attachment D.**

16. Effluent Screening & Limitation Development:
See **Attachment E** for DMR data and effluent application data. See **Attachment F** for the effluent limitation analysis, including MSTRANTI with a Data Source Report, and STATS analyses.

Table II. Effluent Limitations Summary for Outfall 001

CEDS Code	PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
			MONTHLY AVERAGE	WEEKLY AVERAGE	MIN	MAX	FREQ	SAMPLE TYPE
001	Flow (MGD)	NA	NL	NA	NA	NL	1/Day	Estimate
002	pH (s.u.)	1, 5	NA	NA	6.0	8.0	1/Day	Grab
004	TSS	3	20 mg/L 2300 g/d	30 mg/L 3400 g/d	NA	NA	1/Month	Grab
005	TRC (mg/L)	2	0.0024	0.0029	NA	NA	1/Day	Grab
007	Dissolved Oxygen (mg/L)	3	NA	NA	5.0	NA	1/Day	Grab
068	TKN	3,4	3.0 mg/L 340 g/d	4.5 mg/L 510 g/d	NA	NA	1/Month	Grab
120	*E. coli* (geo mean)	1	126 N/100 mL	NA	NA	NA	4/Month	Grab 10 am & 4pm
157	TRC* contact	3	NA	NA	1.0	NA	1/Day	Grab
159	cBOD5	3,4	10 mg/L 1100g/d	15 mg/L 1700 g/d	NA	NA	1/Month	Grab
213	TRC* contact	3	NA	NA	0.60 mg/L	NA	1/Day	Grab

*These samples are not final effluent. The compliance point for these limitations is at the outlet of the chlorine contact tank prior to dechlorination.

1. Water Quality Standards
2. Water Quality-based
3. Best Engineering Judgment (BEJ)
4. A. J. Anthony's Swamp Limits memorandum (1987) & Stream Sanitation Memo (6/13/01)
5. Federal Effluent Guidelines for Secondary Treatment

a. Water Quality Standards/Water Quality-Based

pH: 9 VAC 25-260-50 of the VA Water Quality Standards outlines numerical criteria for pH in Class VII waters between 3.7 s.u. and 8.0 s.u. However, Federal Effluent Guidelines establish secondary treatment standards with a pH range of 6.0 s.u. to 9.0 s.u. Consequently, the limitations applied are the more conservative of the upper and lower bounds, resulting in a range of 6.0 s.u to 8.0 s.u.

E. coli: The 2006 permit cycle allowed TRC to be used as a surrogate for bacteria. The practice of using surrogates is no longer acceptable. Consequently, an *E. coli* limitation, consistent with 9VAC25-260-170.A, is assigned with this reissuance. Monitoring is required four times per month, consistent with the underlying standard (4 sample geometric mean). A compliance schedule is not permitted because the facility should already be in compliance with the limitation.

Toxics: Numeric permit limitation calculations utilize conservative low flow ambient conditions to represent circumstances in which the effluent has the greatest potential to impact the receiving stream. Because the receiving stream is classified as swamp water a mixing zone is not permitted and the facility has to meet WQS at the end of pipe. Zero percent mixing was inserted in the MSTRANTI spreadsheet to calculate the maximum wasteload allocations (WLAs) that maintain WQS at the end of the pipe. Because the discharge is intermittent, the chronic standards do not apply to this discharge. STATS.exe is then used to determine if reasonable potential exists for a given pollutant to exceed the

WQS. The results of these analyses are included in **Attachment F** and summarized in the table below. Pollutants that demonstrate reasonable potential to violate WQS are assigned a limitation based on the results of STATS.exe. As a full pollutant screening was not required, the only pollutants that will be evaluated are TRC and ammonia.

TRC: Chlorine is a toxic pollutant purposefully introduced into the effluent. Consequently, a reasonable potential analysis is not necessary to establish the need for a limitation. Per GM00-2011, a chlorine limitation was forced using a datum of 20,000 ug/L. The limitation calculated with this reissuance is more stringent because the stream is now being evaluated as a Tier 2 waterbody, as compared to a Tier 1 in the 2006 permit reissuance. Although the limitation is becoming more stringent, a compliance schedule is not granted because the facility should be able to demonstrate compliance with the limitation without any treatment upgrades or operational changes.

Ammonia: Per GM00-2011, ammonia is a pollutant known to be present in municipal effluents and evaluations should be conducted with an assumed datum of 9.00 mg/L. However, in this case, there is a TKN limitation set at 3.0 mg/L. Because ammonia is a component of TKN, the reasonable potential analysis was run with a value of 3.00 mg/L. The analysis indicates a limitation of 2.10 mg/L is needed. However, ammonia generally comprises 40-60% of TKN, so the maximum predicted ammonia concentration that could be discharged in compliance with the TKN limitation is 1.8 mg/L. Consequently, the TKN limitation is protective of ammonia toxicity.

Table III. Summary of Reasonable Potential Analyses

Parameter	Assumed Effluent Concentration	Aquatic WLA		HH WLA	Reasonable Potential
		Acute	Chronic		
TRC (ug/L)	20,000	4.8	NA	-	Yes
Ammonia (mg/L)	3.00 mg/L	2.10	NA	-	Yes

b. Best Engineering Judgment:

TSS: There is no water quality standard for TSS; however, Federal Effluent Guidelines (FEG) establish a maximum allowable technology standard for secondary treatment of 30 mg/L. Typically plants are designed to achieve the same cBOD removal as TSS, so often times, the TSS limit matches the cBOD5 limit. TSS limits were not set equal to the cBOD5 limits (required in Alan Anthony's Swamp Water Memorandum). Federal Guidance and permit regulations allow adjustment of TSS limits upward to the level (not to exceed 30 mg/L) where treatment that meets cBOD5 limits can be consistently achieved. The treatment technology (anoxic tank) needed to meet cBOD5 limits of 10 mg/L may not consistently achieve TSS of 10 mg/L in the batch (intermittent) discharge mode associated with this facility. Therefore, the TSS limit was raised to the next higher treatment level of 20 mg/L in previous permit cycles and this reissuance proposes continuation of the existing TSS limit in the 2006 permit.

Dissolved Oxygen: The 2006 cycle of this permit assigned a D.O. limitation based on the WQS for free-flowing streams. At the time, Anderson Branch was classified in the WQS as a free-flowing (Class III) stream. Since then, the stream has been reclassified as swamp waters (Class VII), for which a D.O. standard is not established. Because the D.O. limitation has been in the permit and the permittee has established compliance with the limit, backsliding is not permitted. Consequently, the D.O. limitation is carried forward based on best professional judgment and the antibacksliding regulation.

TRC contact: Additional chlorine limitations are required by Sewage Collection and Treatment Regulations, 9 VAC 25-790.

c. Modeling:
cBOD5 and TKN: A. J. Anthony's Swamp Limits memorandum (1987) developed recommended limitations for swamp water discharges regardless of flow. The cBOD5 limitation of 10 mg/L and TKN limitation of 3.0 mg/L are applied in this permit as is consistent with previous issuances.

d. Federal Effluent Guidelines:
pH: See comment above in Part 16.a.

17. Antibacksliding Statement: All limits are at least as stringent as the 2006 permit. The loading limitations for TKN are calculated to accurately reflect two significant figures (0.5 kg/d → 510 g/d and 0.3 kg/d → 340 g/d). This does not represent relaxation of the limit, but rather a change in the expression of the limit.

18. Compliance Schedules: There is one new (*E. coli*) and one more stringent (TRC) permit limitation proposed in this reissuance. However, in both cases the permittee should already be in compliance with the limitations; consequently, compliance schedules are not necessary.

19. Special Conditions:

a. **I.B: Additional Chlorine Limitations and Monitoring Requirements**
Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC25-790 and Water Quality Standards, 9VAC25-260-170, Bacteria; other recreational water. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection. Alternate disinfection language is also included in this condition. The recommended sampling frequency when alternate disinfection is employed is once per week per GM10-2003.

b. **I.C.1: 95% Capacity Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 4 for all POTW and PVOTW permits.

c. **I.C.2: CTC & CTO Requirement**
Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790.

d. **I.C.3: O&M Manual Requirement**
Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9VAC25-31-190 E.

e. **I.C.4**: **Materials Handling/Storage**
Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

f. **I.C.5: Reliability Class**
Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC25-790 for all municipal facilities.

g. **I.C.6: Licensed Operator Requirements**
Rationale: The VPDES Permit Regulation, 9VAC25-31-200 C and the Code of Virginia §54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.), require licensure of operators. 9VAC25-790-300 recommends licensure class levels based on treatment works size and processes. See Factsheet Part 6 for further discussion.

h. **I.C.7: TMDL Reopener**
Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

i. **I.C.8: Sludge Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-220 C for all permits issued to treatment works treating domestic sewage.

j. **I.C.9 Sludge Use and Disposal**
Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

k. **I.C.10: Compliance Reporting**
Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

l. **I.C.11: Indirect Dischargers**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

m. **I.C.12: Closure Plan**
Rationale: The Code of Virginia §62.1-44.19 of the State Water Control Law. This condition establishes the requirement to submit a closure plan for the wastewater treatment facility if the treatment facility is being replaced or is expected to close.

n. **I.C.13: Maintain Intermittent Discharge Status**
Rationale: This condition requires the permittee to maintain an intermittent discharger status that the permit is based upon.

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o. **Part II. Conditions Applicable to All Permits**
Rationale: VPDES Permit Regulation, 9VAC25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. Changes to Permit:

Cover Page is updated to delegate signatory authority to the Water Permit Manager in accordance with DEQ Policy 2-09 and update language in accordance with GM10-2003. The stream class is also updated from "III" to "VII" in accordance with the current WQS (1/6/11).

Part I.A					
Parameter	Effluent Limits		Monitoring Requirement		Reason
	From	To	From	To	
002- pH (maximum)	9.0 s.u.	8.0 s.u.	1/Day	1/Day	Adjusted in accordance with the stream classification. (WQS 1/6/11)
004-TSS Monthly Avg/ Daily Max	20.0 mg/L, 2.3 kg/d / 30.0 mg/L, 3.4 kg/d	20 mg/L, 2300 g/d / 30 mg/L, 3400 g/d	1/Month	1/Month	GM06-2016.
005- TRC Monthly Avg/ DailyMax	0.008 mg/L 0.010 mg/L	0.0024 mg/L 0.0029 mg/L	1/Day	1/Day	Revised limitation to reflect the Tier 2 classification of the receiving stream. See Part 16 of the FS.
068- TKN Monthly Avg/ Daily Max	0.3 kg/d / 0.5 kg/d	340 g/d / 510 g/d	1/Month	1/Month	GM06-2016.
120- *E. coli*	-	126 N/100 mL	-	4/Month	In accordance with the standards. Surrogate parameters (i.e. TRC) are no longer acceptable.
159- CBOD5 Monthly Avg/ Daily Max	1.1 kg/d / 1.7 kg/d	1100 g/d / 1700 g/d	1/Month	1/Month	GM06-2016.

From	To	Special Condition	Change	Reason
NL=, NA=	"NL," "NA"	Definitions	Expressed as sentences	Permit Writer preference.
Part I.A.1.[a]	Part I.A.2	Design Flow	Updated	Reference to 95% design capacity added for clarity.
Part I.A.1.[b]	Part I.A.1.[a]	TRC footnote	No Change	N/A
-	Part I.A.1.[b]	Significant figures footnote	Added	GM06-2016.

From	To	Special Condition	Change	Reason
-	Part I.A.1.[c]	Compliance reporting footnote	Added	For clarity.
-	Part I.A.1.[d]	4/month Definition	Added	To define the requirements of this monitoring frequency.
-	Part I.A.4.	85% Removal	Added	To reflect current VPDES Permit Manual (1/27/10).
Part I.A.3	Part I.A.5	Sampling location	None	N/A
Part I.B.1	Part I.B.1	TRC Limits and Monitoring Requirements	Updated	Parameter 157 revised to 2 significant figures. Language revised to reflect "each chlorine contact tank."-
Part I.B.2	Part I.B.2	If chlorine disinfection is not used…	Updated	To reflect the *E. coli* limitation in Part I.A.
Part I.C.1	Part I.C.1	95% Design Capacity	Updated	To reflect current VPDES Permit Manual (1/27/10).
Part I.C.2	Part I.C.2	CTC/CTO Requirements	Updated	To reflect current VPDES Permit Manual (1/27/10).
Part I.C.3	Part I.C.3	O&M Manual	Updated	To reflect current VPDES Permit Manual (1/27/10).
Part I.C.4	Part I.C.4	Materials Handling/Storage	Updated	To reflect current VPDES Permit Manual (1/27/10).
Part I.C.5	Part I.C.5	Reliability Classification	None	-
-	Part I.C.6	Licensed Operator Requirements	Added	Per GM07-2012.
Part I.C.6	Part I.C.7	TMDL Reopener	None	-
Part I.C.7	Part I.C.8	Sewage Sludge Reopener	None	-
Part I.C.8	Part I.C.9	Sludge Management Plan	Updated	To reflect current VPDES Permit Manual (1/27/10).
Part I.C.9	Part I.C.10	Compliance Reporting	Updated	To reflect current VPDES Permit Manual (1/27/10).
-	Part I.C.11	Indirect Dischargers	Added	To reflect current VPDES Permit Manual (1/27/10) and address the existing practice of accepting influent from Black Swamp Regional WWTF to feed the plant in the offseason.
-	Part I.C.12	Closure Plan	Added	In accordance with Staff Meeting Decisions 6/29/10.
Part I.C.10	Part I.C.13	Intermittent Discharge	Updated	To reflect current PRO policy.
-	Part II.A.4	VELAP requirements	Added	In accordance with WPM email 7/19/11.

21. Variances/Alternate Limits or Conditions: None

22. Public Notice Information required by 9VAC25-31-280 B:

Public Notice Information required by 9 VAC 25-31-280 B:
Comment period: Publishing Newspaper: *Sussex-Surry Dispatch*

Publication Dates: 8/24/11 & 8/31/11
Start Date: 8/24/11 End Date: 9/26/11

All pertinent information is on file and may be inspected, and copied by contacting Emilee Carpenter at Virginia DEQ-Piedmont Regional Office, 4949-A Cox Road, Glen Allen VA 23060, (804) 527-5072, e-mail emilee.carpenter@deq.virginia.gov; Fax: 804/527-5106.

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment or may request copies of the documents from the contact person listed above.

23. Additional Comments:

Previous Board Action: None

Staff Comments:

- The facility is NOT eligible for reduced monitoring because it discharges intermittently.
- Because this facility discharges to the Chowan and Dismal Swamp Basin, it is not subject the Chesapeake Bay nutrient regulations.
- The facility is not required to register for the General VPDES Permit VAR05 for Discharges of Storm Water Associated with Industrial Activity (9VAC 25-151, Sector T) due to a design flow less than 1.0 MGD
- The owner commented on the draft permit requesting bacteria monitoring relaxation. In addition to the permittee being ineligible for reduced monitoring as noted above, seasonal operational challenges at the facility and measurable bacteria results submitted with the application were cited as a basis for denial of the request. The permittee ultimately concurred with the draft permit September 26, 2011.

Other Agency Comments (See **Attachment H**):

- The VDH Office of Drinking Water (ODW) reviewed the reissuance application. VDH comments dated July 5, 2011, stated that the raw water intake for the City of Norfolk waterworks is located at Courtland, approximately 26 miles downstream of the discharge. This should be a sufficient distance to minimize the impacts of the discharge. VDH expressed no comments in opposition to the permit reissuance application, nor did VDH request review of the draft permit.
- DCR commented in a letter dated May 3, 2011 that natural heritage resources, the Lake Chubsucker (*Erimyzon sucetta*) and the Lined topminnow (*Fundulus lineolatus*) have been historically documented in the Anderson Branch. DCR recommended an inventory for the resources in the study area be conducted. DEQ has relayed this recommendation to the owner. See Attachment G.

Final Concurrence Comments:

- Annual permit maintenance fees have been paid. The last payment was deposited September 20, 2010.
- EPA has waived the right to comment on the draft permit.
- The permit was reissued prior to expiration.
- This project is not controversial.
- The discharge is in conformance with the existing planning documents for the area.
- The proposed limitations will maintain Water Quality Standards.
- This facility is not a Virginia Environmental Excellence Program (VEEP) participant.
- The permittee is not an eDMR participant; the Sussex School Board requested exemption from the requirement to participate in eDMR in a letter dated July 14, 2011. Exemption was approved July 21, 2011. This facility will continue with hard copy DMR submittal for the 2011 permit cycle.

Public Comment: The Crater Planning District Commission (PDC) commented on September 7, 2011 that it finds the proposal to be in full accord with the Crater PDC's environmental policy directives and supports the request. No comments in opposition were received.

24. 303(d) Listed Segments (TMDL): During the 2010 305(b)/303(d) Water Quality Assessment, the tributaries of Hunting Quarter Swamp, including Anderson Branch were assessed as Category 4C waters ("Water is impaired or threatened of one or more designated uses but does not require a TMDL because the impairment is not caused by a pollutant and/or is determined to be caused by natural conditions.") The Aquatic Life Use is impaired due to low dissolved oxygen; this has been attributed to the natural swampwater conditions of the watershed, which is classified as Class VII. A site specific swampwater DO standard for the tributaries of Hunting Quarter Swamp still needs to be developed. However, in the interim, DEQ staff believe the combination of cBOD5, TKN, and DO numeric VPDES effluent limits will not cause significant changes to the naturally occurring dissolved oxygen in the receiving water body. The Wildlife Use is fully supporting; the Fish Consumption and Recreation Uses were not assessed.

Attachments:

A. Flow Frequency Memorandum
B. Site Diagram
C. Topographic Map
D. Site Inspection Report
E. Effluent Data
F. Effluent Limitation Development
G: Government Coordination

Attachment A

Flow Frequency Memorandum 7/11/11

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
Sussex Schools Complex WWTP – VA00090786

TO: Emilee Carpenter

FROM: Jennifer Palmore, P.G.

DATE: July 11, 2011

COPIES: File

The Sussex Schools Complex's wastewater treatment facility discharges to Anderson Branch near Sussex, VA. The outfall is located at rivermile 5AAND001.55. Flow frequencies have been requested at this site for use in developing effluent limitations for the VPDES permit.

The discharge is located approximately 0.3 mile downstream of an USGS partial-record gage (Anderson Branch near Sussex, VA - #02046500) which is located at the Route 40 bridge. The gage was operated as a continuous record gage from 1949-1956 and has been sporadically monitored for peak flow. Although the gage does not have the requisite 10 years of record necessary to calculate the flow statistics, there were extensive periods of zero flow. Therefore the low flow frequencies (1Q10, 7Q10, 30Q5, and 30Q10) should be considered 0.0 cfs.

During the 2010 305(b)/303(d) Water Quality Assessment, all of the tributaries of Hunting Quarter Swamp, which includes Anderson Branch, were assessed as Category 4C waters ("Impaired or threatened for one or more designated uses but does not require a TMDL because the impairment is not caused by a pollutant and/or is determined to be caused by natural conditions.") The Aquatic Life Use is impaired due to low dissolved oxygen attributed to the natural swampwater conditions in the watershed. The applicable fact sheet is attached. The Wildlife Use is fully supporting and the Recreation- and Fish Consumption Uses were not assessed.

Due to the natural swampwater conditions which cause dissolved oxygen WQS violations, the appropriate tier cannot be determined at this time. No further degradation should be allowed.

Water quality data is attached. Field data from monitoring station 5AAND000.10 was chosen. The station is located near the mouth of Anderson Branch at the Route 634 bridge. Unfortunately, hardness data was not collected at this station, so hardness data from station 5AHQS006.22 was used. The station is located on Hunting Quarter Swamp at the Route 624 bridge, which is directly below the confluence with Anderson Branch.

If you have any questions concerning this analysis, please let me know.

Station ID	Collection Date	Depth Desc	Depth	Temp Celc	Field Ph	Do Probe
5AAND000.10	1/18/2006	S	0.3	10.68	5.9	7.44
5AAND000.10	2/6/2006	S	0.3	7.44	6.24	8.96
5AAND000.10	3/22/2006	S	0.3	8.3	6.6	5.6
5AAND000.10	4/24/2006	S	0.3	23.5	6.1	7.6
5AAND000.10	5/23/2006	S	0.3	24.1	6	4.9
5AAND000.10	6/29/2006	S	0.3	26.4	6.2	1
5AAND000.10	7/18/2006	S	0.3	30.9	5.9	0.4
5AAND000.10	8/21/2006	S	0.3	26.1	6.1	0.5
5AAND000.10	3/15/2007	S	0.3	17.9	5.9	
5AAND000.10	4/4/2007	S	0.3	21.2	5.9	4.3
90th percentile				**26.9**	**6.3**	
10th percentile				**8.2**	**5.9**	

					00900	
					HARDNESS, TOTAL (MG/L AS CACO3)	
Sta Id	**Collection Date Time**	**Depth Desc**	**Depth**	**Container Id Desc**	**Value**	**Com Code**
5AHQS006.22	07/20/2004 13:25	S	0.3	R	24	
	09/16/2004 13:50	S	0.3	R	14.8	
	01/26/2005 13:50	S	0.3	R	16	
	03/28/2005 13:20	S	0.3	R	12	
	06/07/2005 14:05	S	0.3	R	22	
	08/04/2005 14:15	S	0.3	R	32	
	10/24/2005 15:40	S	0.3	S1	30	
	12/19/2005 15:15	S	0.3	R	24	
	02/22/2006 13:40	S	0.3	R	18	
	04/13/2006 14:20	S	0.3	R	24	
	06/26/2006 14:35	S	0.3	R	24	
	08/17/2006 12:40	S	0.3	R	26	
	10/18/2006 12:50	S	0.3	R	10	
	12/19/2006 13:45	S	0.3	R	10	U
Average					**20**	

2010 Fact Sheets for 303(d) Waters

RIVER BASIN: Chowan River and Dismal Swamp Basins **HYDROLOGIC UNIT:** 03010201

STREAM NAME: **Hunting Quarter Swamp Tributaries**

TMDL ID: **K24R-02-DO** **2010 IMPAIRED AREA ID:** VAP-K24R-01

ASSESSMENT CATEGORY: 4C **TMDL DUE DATE:** 2020

IMPAIRED SIZE: 62.64 - Miles **Watershed:** VAP-K24R

INITIAL LISTING: 2008

UPSTREAM LIMIT:

DOWNSTREAM LIMIT:

All tributaries to Hunting Quarter Swamp. Includes Anderson Branch, Lees Branch, and Thweatt Branch.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT: Dissolved Oxygen

During the 2008 cycle, Hunting Quarter Swamp and its tributaries from its confluence with the Nottoway River to its headwaters were reclassified as Class VII swampwaters. Monitoring at stations 5AAND000.10, 5AAND004.57, 5ALEE000.73, and 5ATWT001.19 showed that the tributaries have depressed dissolved oxygen levels.

Hunting Quarter Swamp and its tributaries from its confluence with the Nottoway River to their headwaters were reclassified as Class VII swampwaters during the 2010 cycle. The tributaries will be considered Category 4C waters until the swampwater dissolved oxygen standard can be developed.

IMPAIRMENT SOURCE: Natural Conditions

The dissolved oxygen exceedances in this segment are attributed to natural conditions.

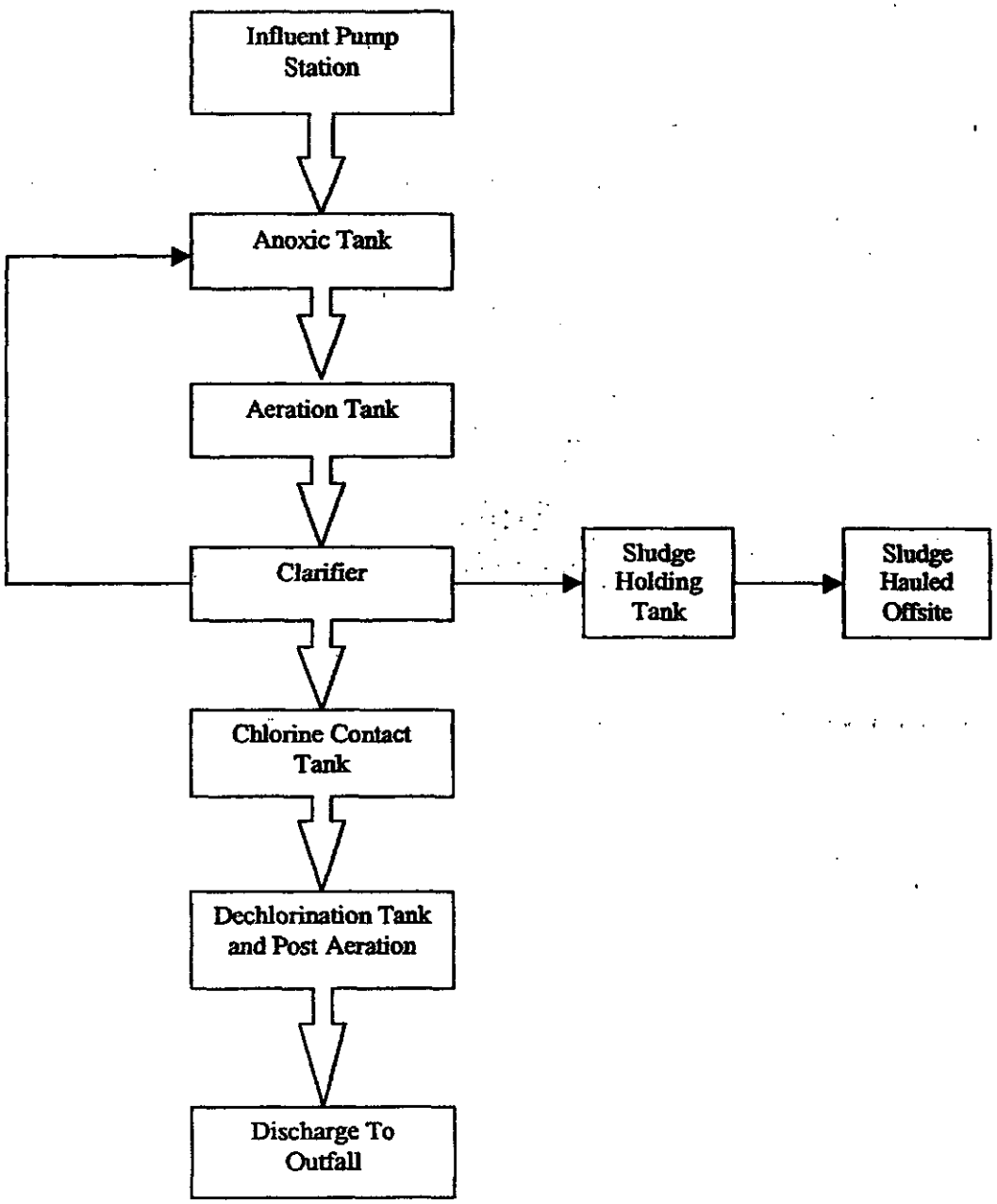
RECOMMENDATION: WQS Change

Attachment B

Facility Diagram

SUSSEX SCHOOL COMPLEX SEWAGE TREATMENT PLANT

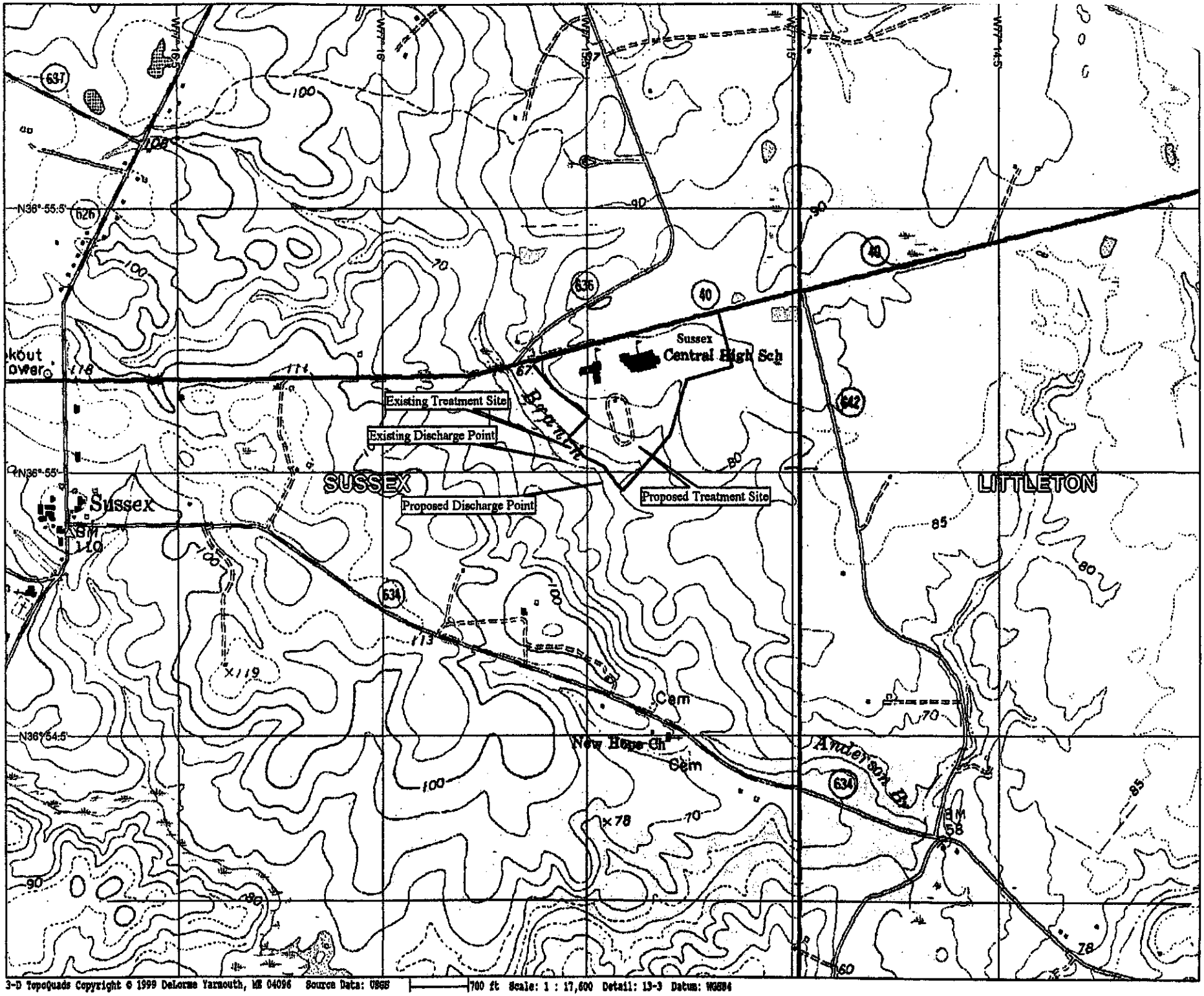
Process Schematic/ Treatment Flow Diagram



Attachment C

Topographic Map:

Sussex Quadrangle
Latitude: 36º 55’ 0.85”, Longitude: -77º 15’ 27.60”


Existing Treatment Site
Existing Discharge Point
Proposed Discharge Point
Proposed Treatment Site
Sussex Central High Sch
SUSSEX
LITTLETON
Sussex
New Hope Ch
Cem
Anderson Br
637
626
635
40
642
534
634
N38°-55.5'
N38°-55'
N38°54.5'
3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 700 ft Scale: 1 : 17,600 Detail: 13-3 Datum: WGS84


State Route 636
Sussex Central Middle School
D
E
Sussex Central High Schoo
Sussex Dr
40
Outfall 001
© 2011 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2011 Commonwealth of Virginia
Google

Attachment D

Site Inspection Report

(July 7, 2011)

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road **Glen Allen, VA 23060** **804/527-5020**

SUBJECT: Sussex Schools Complex WWTP, VA0090786 Site Visit

TO: File

FROM: Emilee Carpenter – PRO

DATE: July 7, 2011

COPIES: File

I performed an announced site visit at the Sussex Schools Complex WWTP on July 6, 2011. Gerald Lacerte, the plant operator, led me on a tour of the facility at 10:45 am. I am in the process of reissuing the VPDES permit for this facility and the visit was intended to ensure that the permit is consistent with actual conditions of the receiving stream and the facility installed. It was also intended to provide a visual assessment of the discharge's impact on the receiving stream.

The facility treats domestic waste generated by the school complex. The treatment plant is an in-ground Upflow Sludge Blanket Filtration (USBF) System. The design flow at 30,000 gpd dramatically exceeds actual flows at 3,000-5,000 gpd. One half of the system is maintained off-line in an effort to manage the low flows.

In lieu of influent screening, wastewater is sent through grinder pumps as it enters the treatment system. The USBF system first introduces wastewater to an anoxic compartment where it mixes with activated sludge recycled from the bottom of an adjacent wedge shaped clarifier. This mixed wastewater is pumped to the aerated compartment on the other side of the clarifier. The aerated compartment discharges to the clarifier at a higher point on the "wedge". After aeration, a stream of mixed liquor enters the clarifier at this higher level. Here the mixed liquor flocs and settles. At the extreme bottom of the wedge clarifier sludge can be drawn off for disposal and/or mixed back into the anoxic compartment. The clarified water above the sludge blanket in the clarifier overflows a weir into a chlorine contact tank where sodium hypochlorite is added using a tablet chlorinator. Finally the water enters a post aeration tank through a tablet dechlorinator (Sodium bisulfite). At the exit point of the post aeration tank is the sampling point.

The discharge to the Anderson Branch is a pipe approximately 30 yards away. The plant typically discharges from 6 am to 2 pm each day and was discharging at the time of my visit. The visual inspection of the outfall does not indicate adverse impact on the receiving stream.

A settlometer is used to determine the wasting schedule. Mr. Lacerte aims to keep his Mixed Liquor Suspended Solids (MLSS) around 400-500 mg/L, and will waste above that level. According to Mr. Lacerte, waste sludge is pumped and hauled roughly every six weeks.

Chemicals used in the treatment process, including soda ash, refined sugar, chorination and dechlorination tablets are stored inside the lab building. The chlor and dechlor buckets that are in use are stored outside with sealed lids. There is no exposure of chemicals to storm water.

The USBF system has been challenged by low influent loading since it was brought on line. In attempts to remedy this situation, numerous operating strategies have been tried. In addition to keeping half of the plant offline, Mr. Lacerte has been experimenting with varying carbon feed scenarios. He typically adds 10-20 lbs of refined sugar each day. He also has begun feeding the system twice a week with 2500 gallons of influent wastewater from the SSA's Black Swamp WWTF in order to compensate for the low flow summer season.

At the time of my visit the plant was organically underloaded and not performing to meet design effluent levels. The wastewater in the chlorine contact tank was the color of tea. Mr. Lacerte indicated that he plans to seed the plant with sludge from Black Swamp if the current situation persists another week.

I have requested that Mr. Lacerte keep me informed of the status of the plant as he attempts to remedy the current situation.

Attachment E

Effluent Data:

DMR Data
Application Data

Facility Name:Sussex School Complex STP
Permit No:VA0090786
Outfall Number: 001

DMR data

Due Date	FLOW (MGD)		PH (s.u.)		TSS (mg/L)		DO (mg/L)	TKN (mg/L)		cBOD5 (mg/L)	
	Monthly Average	Max	Min	Max	Monthly Average	Max	Min	Monthly Average	Max	Monthly Average	Max
10-Jun-08	0.0053	0.0149	7	8	0.0965	0.0965	5.08	<QL	<QL	7	7
10-Jul-08	0.0049	0.0138	7.5	8	0.2657	0.2657	5.2	4.17	7.8	<QL	<QL
10-Aug-08	0.0028	0.0048	7.5	8	0.0969	0.0969	6.27	<QL	<QL	<QL	<QL
10-Sep-08	0.0025	0.0064	7.5	8	0.0795	0.0795	5.85	<QL	<QL	<QL	<QL
10-Oct-08	0.0035	0.0082	7.5	8	0.0265	0.0265	5.26	<QL	<QL	<QL	<QL
10-Nov-08	0.0036	0.0068	7.5	8.5	0.1695	0.1695	6.25	<QL	<QL	<QL	<QL
10-Dec-08	0.0034	0.0187	7	8	0.1207	0.1207	6.95	<QL	<QL	8	8
10-Jan-09	0.0026	0.0083	7.3	8	0.0038	0.0038	5.99	<QL	<QL	7	7
10-Feb-09	0.0028	0.0064	7.5	8	0.0114	0.0114	8.11	3.2	3.2	18	18
10-Mar-09	0.0044	0.029	7.5	8	1.36	1.36	5.84	9.4	9.4	37	37
10-Apr-09	0.0027	0.0068	7	8	0.2271	0.2271	6.57	4.1	4.1	7	7
10-May-09	0.0031	0.009	7	8	0.1219	0.1219	5.79	2.8	2.8	13	13
10-Jun-09	0.003	0.0067	7	8	0.0545	0.0545	6.03	<QL	<QL	7	7
10-Jul-09	0.0026	0.0105	7	8	0.0636	0.0636	5.76	<QL	<QL	<QL	<QL
10-Aug-09	0.002	0.0092	7.5	8	0.0606	0.0606	5.72	<QL	<QL	<QL	<QL
10-Sep-09	0.002	0.0057	7.5	8	0.0795	0.0795	5.84	2	2	6	6
10-Oct-09	0.0047	0.0103	7	8	0.1385	0.1385	5.84	<QL	<QL	6	6
10-Nov-09	0.0045	0.0078	7	8	0.0999	0.0999	6.18	<QL	<QL	<QL	<QL
10-Dec-09	0.0047	0.013	7.5	8.5	0.0363	0.0363	6.33	<QL	<QL	<QL	<QL
10-Jan-10	0.0035	0.0099	7	8	0.0303	0.0303	6.51	<QL	<QL	<QL	<QL
10-Feb-10	0.0038	0.0127	7	8	0.1696	0.1696	6.58	2.4	2.4	6	6
10-Mar-10	0.0035	0.0103	7	8	0.0908	0.0908	7.02	1.4	1.4	10	10
10-Apr-10	0.0042	0.0099	7	8	0.1499	0.1499	5.92	2.7	2.7	18	18
10-May-10	0.0035	0.0099	7	7.5	0.053	0.053	5.78	0.67	0.67	<QL	<QL
10-Jun-10	0.0045	0.0146	7	8	0.0273	0.0273	5.02	<QL	<QL	<QL	<QL
10-Jul-10	0.0048	0.012	7	8	0.0045	0.0045	5.12	1	1	<QL	<QL
10-Aug-10	0.0035	0.0076	7	8	0.0148	0.0148	5.26	1.3	1.3	<QL	<QL
10-Sep-10	0.0035	0.0099	7	8	0.1287	0.1287	5.1	<QL	<QL	<QL	<QL
10-Oct-10	0.0039	0.008	7	8	0.2805	0.2805	5.24	1.6	1.6	<QL	<QL
10-Nov-10	0.0068	0.0318	7	8	0.2362	0.2362	5.28	0.7	0.7	8	8
10-Dec-10	0.0044	0.0093	7	7.5	0.0696	0.0696	6.31	0.86	0.86	<QL	<QL
10-Jan-11	0.0034	0.0093	7	8	0.0643	0.0643	6.24	2.2	2.2	8	8
10-Feb-11	0.0039	0.0099	7	7.5	0.3002	0.3002	7.49	1.6	1.6	7	7
10-Mar-11	0.0042	0.0097	7	7.5	0.1351	0.1351	6.35	5.3	5.3	7	7
10-Apr-11	0.0048	0.0118	7	8	0.1241	0.1241	5.69	0.5	0.5	<QL	<QL
10-May-11	0.0038	0.0106	7	8	0.0715	0.0715	5.33	1.3	1.3	<QL	<QL
10-Jun-11	0.0044	0.0126	7	8	0.0348	0.0348	5.66	<QL	<QL	11	11
Max	**0.0068**	**0.0318**	**7.5**	**8.5**	**1.36**	**1.36**	**8.11**	**9.4**	**9.4**	**37**	**37**
Average	**0.004**	**0.0110**	**7.1432**	**7.9730**	**0.1378**	**0.1378**	**5.9665**	**2.4600**	**2.6415**	**10.6111**	**10.6111**
90th %tile	**0.0048**	**0.01472**	**7.5**	**8**	**0.248**	**0.248**	**6.728**	**4.283**	**5.55**	**18**	**18**
10th %tile	**0.0026**	**0.00658**	**7**	**7.8**	**0.02182**	**0.02182**	**5.168**	**0.697**	**0.697**	**6**	**6**

Blue Highlight = Values used in MSTRANTI

Application Data

Sample Date	Temperature (degrees Celsius)
6/22/2010	24.2
7/2/2010	26.2
7/30/2010	4.6
8/11/2010	28.9
8/19/2010	27.3
9/5/2010	22.8
1/7/2011	10.3
1/17/2011	4.3
1/23/2011	4.7
2/3/2011	7.6
2/10/2011	8.2
2/16/2011	9
90th %tile	**27.19**

Attachment F

Effluent Limitation Development:

Stream Sanitation Memo (6/13/01)
Swamp and Marsh Waters Memo (3/9/87)
MSTRANTI Data Source Report
MSTRANTI
STATS.exe

Attachment C

Stream Sanitation Memo

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Water Regional Office

4949-A Cox Road, Glen Allen, VA 23060-6296 804/527-5020

SUBJECT: Stream Sanitation Analysis – Anderson Branch
Relocated Discharge – Sussex Central High School STP

TO: Curt Linderman

FROM: Jennifer Palmore JVP

DATE: June 13, 2001

COPIES: Diane Cook, Modeling File

Background

A stream sanitation analysis request for the new Sussex Central High School STP (VA0090786) was received May 18, 2001. Sussex County is currently building a new high school adjacent to their existing one, necessitating a replacement wastewater treatment plant. The existing plant (VA0031721) and discharge will be closed and all wastewater flows will be diverted to the new plant. Because of the location of the new plant, the discharge will be moved approximately 600 feet downstream to river mile 5AAND001.55. The discharge location is in watershed VAP-K24R in the Chowan River Basin. The proposed discharge rate is 0.03 MGD.

A site visit was performed by Jason Dameron and myself on June 6, 2001. The receiving stream was wide, with swamp characteristics including no defined channel, dead trees, and other wetland vegetation.

Modeling Approach

Because the receiving stream lacked a defined channel and the necessary channel hydraulics, the stream was considered unmodelable using the Regional Model v3.2.

Results and Recommendations

It is recommended that effluent limits for this discharge be established based upon best professional judgement in accordance with A.J. Anthony's Swamp Limits memorandum (1987), which recommends the following limits, regardless of flow:

$CBOD_5$:	10 mg/L
TSS:	10 mg/L
TKN:	3 mg/L
Cl_2:	0.011 mg/L

If you have any questions or require additional information, please do not hesitate to contact me.

UBJECT: Advisory Notification of Effluent Limits for Swamp and Marsh Waters

TO: L. G. Lawson

FROM: A. J. Anthony AJA

DATE: March 9, 1987

COPIES: M. A. Bellanca, W. L. Woodfin, M. D. Phillips, J. W. Gregory, Regional Directors, file

In the event that a proposal is received for discharge to a swamp or marsh that cannot be modeled and the current standards are being violated for whatever reason, OERS recommends the following effluent limits:

$CBOD_5$ =	10 mg/l
TSS =	10 mg/l
TKN =	3 mg/l
D.O. =	3 mg/l
Cl_2 =	0.011 mg/l

Our rationale for these recommendations are as follow:

We have found over the past years, through application of modeling technology to small streams, that the above limits are representative of effluents that are "self-sustaining"; that is: such an effluent will not normally violate the stream standard even if the stream consists of 100% effluent.

Given the fact that the areas of intended application of our recommendations are such that the stream will not possess good mixing processes and may in fact contain 100% effluent for significant distances and times render it necessary, in our opinion, that discharges be essentially of "self-sustaining" quality.

2. $CBOD_5$ -- We are recommending nitrification and consequently $CBOD^5$ is what will be measured. In addition, we believe that where both unoxidized nitrogen and hydrocarbons are limited due to considerations of stream dissolved oxygen, it is correct and reasonable to specify them separately to avoid double counting their impacts.

APPLIES TO DRY DITCHES ALSO!

3. TSS -- We are recommending that TSS be consistent with the BOD limit. This is consistent with past and current practice and should not be difficult to attain.

4 TKN -- We are recommending that unoxidized nitrogen be removed in the treatment plant. The recommended limit on TKN recognizes that a normal domestic effluent usually contains 2-3 mg/l TKN that is refractory and cannot be removed by biological treatment. For industrial discharges this may vary and may be verified by testing. The intent of our recommendation is to remove all biologically oxidizable nitrogen compounds from the effluent.

5. D.O. -- We are recommending that the dissolved oxygen in the effluent be reasonably consistent with that expected to occur in the receiving stream.

6. Cl_2 -- Mixing can be expected to be extremely poor or non-existent and the stream can be expected to contain 100% effluent for significant distances and times. In order to ensure that the chlorine standard is not violated, the discharge must meet the standard.

It is our belief that the above limits will be adequate to:

1. Protect the beneficial uses of and the aquatic life to be expected in swampy and/or marshy streams.

2. Ensure that the limits will not result in additional degradation to the receiving stream.

Provide consistency with the intent and requirements of the law.

It must be pointed out that the above limits are based on the professional opinions of OERS. They are not the result of the application of any predictive technology. The negotiations and trade-offs normally associated with the application of modeling to identify permit limits are simply not practical in this case for the following reasons:

1. There are no models available with which to evaluate various alternatives.

2. The recommended limits are based on professional opinion and are therefore not subject to negotiation.

3. The recommended limits are very stringent and essentially leave no room for trade-offs among the parameters.

As is the case with all guidance provided by OERS, the Regions should obtain concurrence from OERS prior to drafting a permit with the above limits. In addition, if the proposed discharger disagrees with the limits established, then it is our opinion that ample precedent has been established to allow the dischargers to model the system or provide other documentation that the limits as established are not correct subject to the review and approval of the Board.

Please note that toxic requirements are not covered in this memo, and should follow the normal routine for toxics-related issues.

:swamp

MSTRANTI DATA SOURCE REPORT

Sussex School Complex STP
VA0090786

Stream Information	
Mean Hardness	Ambient Stream Data
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Memo
Stream Flows	
All Data	Flow Frequency Memo
Mixing Information	
All Data	Per 9VAC25-260, mixing zones are not allowed for discharges to swampwaters. Zero percent mixing was entered.
Effluent Information	
Mean Hardness	In the absence of actual data, a conservative assumption is made (25 mg/L as CaCO3)
90% Temperature (annual)	Calculated from Application Data
90% Temperature (wet season)	NA
90% Maximum pH	DMR data
10% Maximum pH	DMR data
Discharge Flow	Design Flow

Data Location:

Flow Frequency Memo (7/11/11) - Attachment A
Ambient Data- Attachment A
DMR Data – Attachment E

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Sussex School Complex STP Permit No.: VA0090786

Receiving Stream: Anderson Branch Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	20	mg/L	1Q10 (Annual) =	0	MGD	Annual - 1Q10 Mix =	0	%	Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	26.9	deg C	7Q10 (Annual) =	0	MGD	- 7Q10 Mix =	0	%	90% Temp (Annual) =	27	deg C
90% Temperature (Wet season) =	NA	deg C	30Q10 (Annual) =	0	MGD	- 30Q10 Mix =	0	%	90% Temp (Wet season) =	NA	deg C
90% Maximum pH =	6.3	SU	1Q10 (Wet season) =	0	MGD	Wet Season - 1Q10 Mix =	0	%	90% Maximum pH =	8	SU
10% Maximum pH =	5.9	SU	30Q10 (Wet season)	0	MGD	- 30Q10 Mix =	0	%	10% Maximum pH =	7.8	SU
Tier Designation (1 or 2) =	2		30Q5 =	0	MGD				Discharge Flow =	0.03	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	5	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	na	1.0E+02	--	--	na	1.0E+02	**--**	**--**	**na**	**1.0E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	na	9.3E-01	--	--	na	9.3E-01	**--**	**--**	**na**	**9.3E-01**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	na	2.5E-01	--	--	na	2.5E-01	**--**	**--**	**na**	**2.5E-01**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	7.5E-01	--	na	5.0E-05	7.5E-01	--	na	5.0E-05	**7.5E-01**	**--**	**na**	**5.0E-05**
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.09E+00	na	--	8.41E+00	1.09E+00	na	--	2.10E+00	2.72E-01	na	--	2.10E+00	2.72E-01	na	--	**2.10E+00**	**2.72E-01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	#VALUE!	na	--	8.41E+00	#VALUE!	na	--	2.10E+00	#VALUE!	na	--	2.10E+00	#VALUE!	na	--	**2.10E+00**	**#VALUE!**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	na	4.0E+03	--	--	na	4.0E+03	**--**	**--**	**na**	**4.0E+03**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	na	6.4E+01	--	--	na	6.4E+01	**--**	**--**	**na**	**6.4E+01**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	8.5E+01	3.8E+01	na	--	8.5E+01	3.8E+01	na	--	**8.5E+01**	**3.8E+01**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	na	5.1E+01	--	--	na	5.1E+01	**--**	**--**	**na**	**5.1E+01**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	na	2.0E-04	--	--	na	2.0E-04	**--**	**--**	**na**	**2.0E-04**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	na	5.3E-01	--	--	na	5.3E-01	**--**	**--**	**na**	**5.3E-01**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	na	6.5E+03	--	--	na	6.5E+03	**--**	**--**	**na**	**6.5E+03**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	na	2.2E+00	--	--	na	2.2E+00	**--**	**--**	**na**	**2.2E+00**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	na	1.4E+02	--	--	na	1.4E+02	**--**	**--**	**na**	**1.4E+02**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	na	1.9E+02	--	--	na	1.9E+02	**--**	**--**	**na**	**1.9E+02**
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	2.1E-01	9.5E-02	na	--	2.1E-01	9.5E-02	na	--	**2.1E-01**	**9.5E-02**	**na**	**--**
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	na	1.6E+00	--	--	na	1.6E+00	**--**	**--**	**na**	**1.6E+00**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	6.0E-01	1.1E-03	na	8.1E-04	6.0E-01	1.1E-03	na	8.1E-04	**6.0E-01**	**1.1E-03**	**na**	**8.1E-04**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	2.2E+05	5.8E+04	na	--	2.2E+05	5.8E+04	na	--	**2.2E+05**	**5.8E+04**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	4.8E+00	2.8E+00	na	--	4.8E+00	2.8E+00	na	--	**4.8E+00**	**2.8E+00**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	na	1.6E+02	--	--	na	1.6E+02	**--**	**--**	**na**	**1.6E+02**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	na	1.3E+01	--	--	na	1.3E+01	**--**	**--**	**na**	**1.3E+01**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	na	1.1E+03	--	--	na	1.1E+03	**--**	**--**	**na**	**1.1E+03**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	na	1.6E+02	--	--	na	1.6E+02	**--**	**--**	**na**	**1.6E+02**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	na	1.5E+01	--	--	na	1.5E+01	**--**	**--**	**na**	**1.5E+01**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	2.1E-02	1.0E-02	na	--	2.1E-02	1.0E-02	na	--	**2.1E-02**	**1.0E-02**	**na**	**--**
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	4.6E+01	6.0E+00	na	--	4.6E+01	6.0E+00	na	--	**4.6E+01**	**6.0E+00**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	4.0E+00	2.8E+00	na	--	4.0E+00	2.8E+00	na	--	**4.0E+00**	**2.8E+00**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	1.0E+01	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	na	1.8E-03	--	--	na	1.8E-03	**--**	**--**	**na**	**1.8E-03**
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	9.1E-01	6.8E-01	na	--	9.1E-01	6.8E-01	na	--	**9.1E-01**	**6.8E-01**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	5.5E+00	1.3E+00	na	1.6E+03	5.5E+00	1.3E+00	na	1.6E+03	**5.5E+00**	**1.3E+00**	**na**	**1.6E+03**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	na	3.1E-04	--	--	na	3.1E-04	**--**	**--**	**na**	**3.1E-04**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	na	2.2E-04	--	--	na	2.2E-04	**--**	**--**	**na**	**2.2E-04**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	2.8E-01	2.5E-04	na	2.2E-04	2.8E-01	2.5E-04	na	2.2E-04	**2.8E-01**	**2.5E-04**	**na**	**2.2E-04**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	2.5E-02	na	--	--	2.5E-02	na	--	**--**	**2.5E-02**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	4.3E-02	4.3E-02	na	--	4.3E-02	4.3E-02	na	--	**4.3E-02**	**4.3E-02**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	na	1.3E+02	--	--	na	1.3E+02	**--**	**--**	**na**	**1.3E+02**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	na	9.6E+01	--	--	na	9.6E+01	**--**	**--**	**na**	**9.6E+01**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	na	1.9E+01	--	--	na	1.9E+01	**--**	**--**	**na**	**1.9E+01**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	na	2.8E-02	--	--	na	2.8E-02	**--**	**--**	**na**	**2.8E-02**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	na	1.7E+01	--	--	na	1.7E+01	**--**	**--**	**na**	**1.7E+01**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	na	3.7E+01	--	--	na	3.7E+01	**--**	**--**	**na**	**3.7E+01**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	na	7.1E+02	--	--	na	7.1E+02	**--**	**--**	**na**	**7.1E+02**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	na	1.0E+03	--	--	na	1.0E+03	**--**	**--**	**na**	**1.0E+03**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	na	2.9E+01	--	--	na	2.9E+01	**--**	**--**	**na**	**2.9E+01**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	na	1.5E+01	--	--	na	1.5E+01	**--**	**--**	**na**	**1.5E+01**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	na	2.1E+01	--	--	na	2.1E+01	**--**	**--**	**na**	**2.1E+01**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	6.0E-02	1.4E-02	na	5.4E-05	6.0E-02	1.4E-02	na	5.4E-05	**6.0E-02**	**1.4E-02**	**na**	**5.4E-05**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	na	4.4E+03	--	--	na	4.4E+03	**--**	**--**	**na**	**4.4E+03**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	na	8.5E+01	--	--	na	8.5E+01	**--**	**--**	**na**	**8.5E+01**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	na	1.1E+05	--	--	na	1.1E+05	**--**	**--**	**na**	**1.1E+05**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	na	4.5E+02	--	--	na	4.5E+02	**--**	**--**	**na**	**4.5E+02**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+02	--	--	na	5.3E+02	**--**	**--**	**na**	**5.3E+02**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	na	2.8E+01	--	--	na	2.8E+01	**--**	**--**	**na**	**2.8E+01**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	na	3.4E+00	--	--	na	3.4E+00	**--**	**--**	**na**	**3.4E+00**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	na	5.1E-09	--	--	na	5.1E-09	**--**	**--**	**na**	**5.1E-09**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E-01	--	--	na	2.0E-01	**--**	**--**	**na**	**2.0E-01**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	5.5E-02	1.4E-02	na	8.9E+00	5.5E-02	1.4E-02	na	8.9E+00	**5.5E-02**	**1.4E-02**	**na**	**8.9E+00**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	5.5E-02	1.4E-02	na	8.9E+00	5.5E-02	1.4E-02	na	8.9E+00	**5.5E-02**	**1.4E-02**	**na**	**8.9E+00**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	5.5E-02	1.4E-02	--	--	5.5E-02	1.4E-02	--	--	**5.5E-02**	**1.4E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	na	8.9E+00	--	--	na	8.9E+00	**--**	**--**	**na**	**8.9E+00**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	2.2E-02	9.0E-03	na	6.0E-03	2.2E-02	9.0E-03	na	6.0E-03	**2.2E-02**	**9.0E-03**	**na**	**6.0E-03**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	na	3.0E-02	--	--	na	3.0E-02	**--**	**--**	**na**	**3.0E-02**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+02	--	--	na	2.1E+02	**--**	**--**	**na**	**2.1E+02**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+01	--	--	na	1.4E+01	**--**	**--**	**na**	**1.4E+01**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+02	--	--	na	5.3E+02	**--**	**--**	**na**	**5.3E+02**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	2.5E-03	na	--	--	2.5E-03	na	--	**--**	**2.5E-03**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	1.3E-01	9.5E-04	na	7.9E-05	1.3E-01	9.5E-04	na	7.9E-05	**1.3E-01**	**9.5E-04**	**na**	**7.9E-05**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	1.3E-01	9.5E-04	na	3.9E-05	1.3E-01	9.5E-04	na	3.9E-05	**1.3E-01**	**9.5E-04**	**na**	**3.9E-05**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-04	--	--	na	2.9E-04	**--**	**--**	**na**	**2.9E-04**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+01	--	--	na	1.8E+01	**--**	**--**	**na**	**1.8E+01**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-03	--	--	na	4.9E-03	**--**	**--**	**na**	**4.9E-03**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-02	--	--	na	1.7E-02	**--**	**--**	**na**	**1.7E-02**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	2.4E-01	--	na	1.8E-01	2.4E-01	--	na	1.8E-01	**2.4E-01**	**--**	**na**	**1.8E-01**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+02	--	--	na	1.1E+02	**--**	**--**	**na**	**1.1E+02**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+00	--	--	na	3.3E+00	**--**	**--**	**na**	**3.3E+00**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	5.0E-01	na	--	--	5.0E-01	na	--	**--**	**5.0E-01**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-02	--	--	na	1.8E-02	**--**	**--**	**na**	**1.8E-02**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+02	--	--	na	9.6E+02	**--**	**--**	**na**	**9.6E+02**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	5.1E+00	5.8E-01	na	--	5.1E+00	5.8E-01	na	--	**5.1E+00**	**5.8E-01**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	2.5E-02	na	--	--	2.5E-02	na	--	**--**	**2.5E-02**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.7E-01	- -	- -	3.5E-01	1.9E-01	- -	--	3.5E-01	1.9E-01	- -	--	**3.5E-01**	**1.9E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+02	--	--	na	1.5E+02	**--**	**--**	**na**	**1.5E+02**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+02	--	--	na	5.9E+02	**--**	**--**	**na**	**5.9E+02**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	7.5E-03	na	--	--	7.5E-03	na	--	**--**	**7.5E-03**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	1.4E+01	1.6E+00	na	4.6E+02	1.4E+01	1.6E+00	na	4.6E+02	**1.4E+01**	**1.6E+00**	**na**	**4.6E+02**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+01	--	--	na	6.9E+01	**--**	**--**	**na**	**6.9E+01**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+00	--	--	na	3.0E+00	**--**	**--**	**na**	**3.0E+00**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+00	--	--	na	6.0E+00	**--**	**--**	**na**	**6.0E+00**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E-01	--	--	na	5.1E-01	**--**	**--**	**na**	**5.1E-01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	7.0E+00	1.7E+00	--	--	7.0E+00	1.7E+00	--	--	**7.0E+00**	**1.7E+00**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	1.6E-02	3.3E-03	na	--	1.6E-02	3.3E-03	na	--	**1.6E-02**	**3.3E-03**	**na**	**--**
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	3.5E-03	na	6.4E-05	--	3.5E-03	na	6.4E-05	**--**	**3.5E-03**	**na**	**6.4E-05**
Pentachlorophenol [C]	0	1.9E+01	1.5E+01	na	3.0E+01	1.9E+01	1.5E+01	na	3.0E+01	4.9E+00	3.7E+00	na	3.0E+00	4.9E+00	3.7E+00	na	3.0E+00	**4.9E+00**	**3.7E+00**	**na**	**3.0E+00**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+04	--	--	na	8.6E+04	**--**	**--**	**na**	**8.6E+04**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+02	--	--	na	4.0E+02	**--**	**--**	**na**	**4.0E+02**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	na	4.0E-01	--	--	na	4.0E-01	**--**	**--**	**na**	**4.0E-01**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	5.0E+00	1.3E+00	na	4.2E+02	5.0E+00	1.3E+00	na	4.2E+02	**5.0E+00**	**1.3E+00**	**na**	**4.2E+02**
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	7.9E-02	--	na	--	7.9E-02	--	na	--	**7.9E-02**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.0E+00	--	--	na	4.0E+00	**--**	**--**	**na**	**4.0E+00**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+00	--	--	na	3.3E+00	**--**	**--**	**na**	**3.3E+00**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	na	4.7E-02	--	--	na	4.7E-02	**--**	**--**	**na**	**4.7E-02**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	na	6.0E+02	--	--	na	6.0E+02	**--**	**--**	**na**	**6.0E+02**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	1.8E-01	5.0E-05	na	2.8E-04	1.8E-01	5.0E-05	na	2.8E-04	**1.8E-01**	**5.0E-05**	**na**	**2.8E-04**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	1.2E-01	1.8E-02	na	--	1.2E-01	1.8E-02	na	--	**1.2E-01**	**1.8E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	na	7.0E+00	--	--	na	7.0E+00	**--**	**--**	**na**	**7.0E+00**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	na	1.6E+01	--	--	na	1.6E+01	**--**	**--**	**na**	**1.6E+01**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	na	3.0E+01	--	--	na	3.0E+01	**--**	**--**	**na**	**3.0E+01**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	na	2.4E+00	--	--	na	2.4E+00	**--**	**--**	**na**	**2.4E+00**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	na	2.4E+00	--	--	na	2.4E+00	**--**	**--**	**na**	**2.4E+00**
Zinc	0	3.6E+01	3.6E+01	na	2.6E+04	3.6E+01	3.6E+01	na	2.6E+04	9.1E+00	9.1E+00	na	2.6E+03	9.1E+00	9.1E+00	na	2.6E+03	**9.1E+00**	**9.1E+00**	**na**	**2.6E+03**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and
   Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+01
Arsenic	2.3E+01
Barium	na
Cadmium	5.7E-02
Chromium III	3.6E+00
Chromium VI	1.6E+00
Copper	3.6E-01
Iron	na
Lead	3.5E-01
Manganese	na
Mercury	1.2E-01
Nickel	9.4E-01
Selenium	7.5E-01
Silver	3.2E-02
Zinc	3.6E+00

Note: do not use QL's lower than the minimum QL's provided in agency guidance

7/21/2011 9:55:49 AM

Facility = Sussex School Complex STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 2.10 mg/L
WLAc = Not applicable to intermittent discharges
Q.L. = 0.20 mg/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 3.00 mg/L
Variance = 3.24mg/L
C.V. = 0.6
97th percentile daily values = 7.30025mg/L
97th percentile 4 day average = 4.99137 mg/L
97th percentile 30 day average= 3.61815 mg/L
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 2.10 mg/L
Average Weekly Limit = 2.10 mg/L
Average Monthly Limit = 2.10 mg/L

The data are:

3.00 mg/L

7/21/2011 9:48:48 AM

Facility = Sussex School Complex STP
Chemical = TRC
Chronic averaging period = 4
WLAa = 4.8 ug/L
WLAc = Not applicable to intermittent discharges
Q.L. = 1 ug/L
# samples/mo. = 30
# samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20000 ug/L
Variance = 1440000 ug/L
C.V. = 0.6
97th percentile daily values = 48668.3 ug/L
97th percentile 4 day average = 33275.8 ug/L
97th percentile 30 day average= 24121.0 ug/L
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 4.8 ug/L
Average Weekly Limit = 2.93139459240974 ug/L
Average Monthly Limit = 2.37898158656486 ug/L

The data are:

20,000 ug/L

Attachment G

Government Coordination:

VDH-ODW

DCR

COMMONWEALTH of VIRGINIA

Karen Remley, MD, MBA, FAAP
State Health Commissioner

J.Wesley Kleene, PhD, PE
Director, Office of Drinking Water

DEPARTMENT OF HEALTH
OFFICE OF DRINKING WATER
Southeast Virginia Field Office

830 Southampton Avenue
Suite 2058
Norfolk, VA 23510
Phone (757) 683-2000
Fax (757) 683-2007

MEMORANDUM

TO: Emilee Carpenter
Water Permit Writer
Department of Environmental Quality – Piedmont Regional Office

DATE: JUL 05 2011

FROM: Daniel B. Horne, PE
Engineering Field Director DBH

CITY/COUNTY: Sussex

PROJECT TYPE: ☐ New ☑ Renewal or Revision

☑ VPDES ☐ VPA ☐ VWPP ☐ JPA ☐ Other: _____

☑ Number: VA0090786

OWNER/APPLICANT: Sussex County School Board

PROJECT: Sussex School Complex WWTP

☐ There are no public water supply raw water intakes located within 15 miles downstream or within one tidal cycle upstream of the existing project.

☑ The raw water intake for the City of Norfolk waterworks is located at Courtland, approximately 26 miles downstream of the discharge. This should be a sufficient distance to minimize the impacts of the discharge.

☐ The raw water intake for the _____ waterworks is located _____ miles [downstream/upstream (within one tidal cycle)] of the discharge.

☐ Please forward a copy of the Draft Permit for our review and comment.

☐ Comments:

Prepared by: Kendra Hardy
Kendra Hardy
District Engineer

pc: V.D.H. - Office of Drinking Water, Field Services Engineer
Ms. Kristen M. Lentz, PE, Director of Utilities, City of Norfolk

R:\DIST19\Sussex\GENERAL\Sussex Schools WWTP VPDES Jun2011.docx

Douglas W. Domenech
Secretary of Natural Resources

David A. Johnson
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951

May 3, 2011

Emilee Carpenter
DEQ-PRO
4949-A Cox Road
Glen Allen, VA 23060

Re: Sussex School Complex WWTP

Dear Ms. Carpenter:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Lake chubsucker (*Erimyzon sucetta*, G5/S2/NL/NL) and the Lined topminnow (*Fundulus lineolatus*, G5/S2S3/NL/NL) have been historically documented in Anderson Branch. The Lake chunsucker occurs in Atlantic slope drainages from southern Florida to southeast Virginia, and in several other major drainages including the Gulf Slope, Great Lakes, Mississippi River lowlands and the Mobile Basin (NatureServe, 2009). In Virginia, it is recorded from the Dismal Swamp and Chowan drainages and has been documented in waters with a pH range of 5.6-6.8 (Jenkins and Burkhead, 1993). This species inhabits lowland, warm water ponds, lakes, ditches and calm parts of streams with substrates composed of mud, silt, sand and, infrequently, fine gravel (Lacepede, 1993). Spawning occurs from March to May and eggs are scattered on the vegetation (Cooper, 1935). The Lake chubsucker is intolerant of turbidity and siltation (Trautman, 1981).

The Lined topminnow, a state rare killifish, ranges from Florida to Virginia along the Gulf and Atlantic coastal plains (NatureServe, 2009). In Virginia, it is known from the Chowan drainage and inhabits waters with a pH range of 5.5-6.7 (Jenkins and Burkhead, 1993). This fish forms small groups in swamps and other vegetated standing water bodies, quiet pools and backwaters of streams (Page & Burr, 1991).

Threats to the Lined topminnow include alteration or degradation of its habitat, such as draining or ditching the pools and backwaters where it lives.

The water quality standard for pH for Anderson Branch is 6.0 s.u-9.0 s.u. which has to be obtained at the discharge point since there is no established mixing zone for the stream. If these rare fish species are still present in Anderson Branch, DCR is concerned about adverse impacts from the potentially basic pH discharge with an unknown stream buffering capacity to maintain the acidic environment.

Therefore, due to the potential for this site to support populations of these natural heritage resources, DCR recommends an inventory for the resources in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. Rene' Hypes
Project Review Coordinator

Literature Cited

Cooper, G. P. 1935. Some results of forage fish investigations in Michigan. Transactions of the American Fisheries Society 65: 132-142.

Jenkins, R.E., and N.M. Burkhead. 1993. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland.

Lacepede. 1993. Freshwater Fishes of Virginia. Ed. R. E. Jenkins and N. M. Burkhead. American Fisheries Society, Bethesda, Maryland. p. 472-474.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: June 15 and 16, 2010).

Page, L.M. and B.M. Burr. 1991. A field guide to freshwater fishes. Houghton Mifflin Company. Boston.

Trautman, M.B. 1981. The fishes of Ohio with illustrated keys, revised edition. Ohio State University Press, Columbus.

Carpenter, Emilee (DEQ)

From: Carpenter, Emilee (DEQ)
Sent: Monday, August 01, 2011 4:42 PM
To: Hypes, Rene (DCR)
Cc: Daub, Elleanore (DEQ)
Subject: FW: Sussex School Complex WWTP
Attachments: 60078, DEQ VA0090786, Sussex School Complex WWTP.pdf

Hi Rene:

Thank you for your comments on the subject project dated May 3, 2011. DCR recommended an inventory for the resources in the study area to more accurately evaluate potential impacts to natural heritage resources and offer specific recommendations for minimizing impacts. DEQ will relay your recommendation to the Sussex County School Board.

Your letter also indicated that the water quality standard for pH in Anderson Branch is 6.0 - 9.0 s.u. The stream was reclassified 2/1/10 as a Class VII (swampwater) stream. The pH standard for Class VII waters is 3.7 - 8.0 s.u. There is also a federal technology standard for secondary treatment of 6.0- 9.0 s.u. The draft permit proposes assigning the more limiting lower bound of the technology standard (6.0 s.u.) and the more limiting upper bound of the water quality standard (8.0 s.u.).

We are also working with our water quality monitoring staff to investigate ambient pH impacts in swampwaters in the vicinity of permitted discharges.

Please contact me if you have any questions.

Thank you,

Emilee C. Carpenter
Water Permit Writer, Senior
Piedmont Regional Office
Department of Environmental Quality

emilee.carpenter@deq.virginia.gov
t: 804/527-5072
f: 804/527-5106

From: nhreview (DCR)
Sent: Tuesday, May 03, 2011 12:18 PM
To: Carpenter, Emilee (DEQ)
Subject: Sussex School Complex WWTP

Ms. Carpenter,

Please find attached the DCR-DNH comments for the above referenced project. The comments are in pdf format and can be printed for your records. Also species rank information is available at http://www.dcr.virginia.gov/natural_heritage/help.shtml for your reference.

Please send a confirmation e-mail upon receipt of our comments. Let us know if you have any questions.

Thank you for your request.

René

S. Rene' Hypes
Project Review Coordinator
DCR-DNH
217 Governor Street
Richmond, Virginia 23219
804-371-2708 (phone)
804-371-2674 (fax)
rene.hypes@dcr.virginia.gov

Conserving VA's Biodiversity through Inventory, Protection and Stewardship
www.dcr.virginia.gov/natural_heritage
Virginia Natural Heritage Program on Facebook